

# The FY 2004 Proposal Solicitation of the Atmospheric Composition and Climate Program of the NOAA Climate and Global Change Program

## Background Information

This summary is intended to be a supplement to NOAA's announcement of its FY 2004 Climate and Global Change Grants Program, which gives the timetable, format, and submission procedures for proposals. As an aid to those investigators considering preparing proposals, the present background document provides additional scientific information on the specific foci in the Atmospheric Composition and Climate (ACC) Program for which proposals are solicited.

Those interested in responding with a proposal to the FY 2004 NOAA solicitation are cautioned that the availability of new funds cannot be accurately foreseen. FY 2004 budget constraints could severely limit available funds for new starts.

## Topics and details for FY2004

### (1) Intercontinental Transport and Chemical Transformation

Proposals for FY 2004 are encouraged that support ITCT field activities currently being planned for 2004. Specifically, proposed research should contribute to the regional observations and source/radiative characterization, which were outlined in Section II, that are essential for improved radiative and climate models and assessment of their uncertainties. Proposals are encouraged that target: (i) development of measurement techniques related to this study (and other such field studies), (ii) atmospheric measurements needed to determine the sources and processes that govern the distribution of ozone and the distribution and chemical/radiative properties of aerosols over this region, and (iii) development, evaluation, and application of theoretical models that can simulate these chemical/radiative effects and their influence on the radiative balance in the earth's atmosphere.

### (2) Regular Vertical Profiling of Aerosols

Proposals for FY 2004 are encouraged that support the development of a light aircraft payload that will provide a statistically significant data set on aerosol properties aloft. Specifically, proposals are encouraged that target the development, characterization, and application of instruments for measuring the climate-forcing properties of aerosols, which are optimized for a light aircraft monitoring program. The properties of interest include (i) aerosol light scattering and absorption, as functions of wavelength, particle size, scattering angle, and relative humidity; (ii) size-resolved aerosol chemical composition, including major ionic species, elemental and organic carbon, mineral dust, and total mass; (iii) aerosol number size distribution; (iv) number concentration, size distribution, and chemical composition of cloud condensation nuclei, as a function of

supersaturation; (v) aerosol optical depth above the airplane, as a function of wavelength.

### **(3) Aerosol Indirect Effects**

Proposals for FY 2004 are encouraged that support the general goals of improving our understanding of the effect of aerosols on the microphysical and radiative properties of clouds, and their role in regional and global climate forcing. In particular the focus will be on the effect of aerosol size distribution and composition on cloud drop size distribution and cloud reflectance in nonprecipitating, ice-free clouds. Proposals that target the following elements are encouraged: (i) Measurements (both in-situ and remote) and the development and refinement of analytical methods that address the primary components and processes influencing the indirect effect, in both coupled and decoupled boundary layers; (ii) Development and refinement of numerical aerosol/cloud/radiation models at a range of scales in support of the above measurements; and (iii) Integrated measurement and modeling approaches directed at similar spatial and temporal scales to assess the ability of models to predict complex interactions in the cloudy boundary layer.

Proposals that support ITCT field activities currently being planned for 2004 (see above), or similar programs, will be viewed favorably.

Proposals should consider ITCT field activities as an opportunity to test measurement capabilities and develop analytical tools. Proposals related to other field campaigns that dovetail with ITCT efforts are also welcomed.

### **General Guidance**

Proposal may be submitted for research that will require one two or three years of support. Proposals should be cost efficient ranging from \$50K-\$150K/year of funding.

More information about these activities can be found on the Internet:

<http://www.al.noaa.gov/WWHD/pubdocs/> and the Atmospheric Composition and Climate home page: <http://www.ogp.noaa.gov/mpe/atmochem>.

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